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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,194	11/17/2003	Hiroki Maeda	DAIN:540A	9579

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EXAMINER	
VO, HAI	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,194	MAEDA ET AL.	
	Examiner	Art Unit	
	Hai Vo	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1117*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

   A person shall be entitled to a patent unless –

   (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

   (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 09-043581 as evidenced by Clark et al (US 5,227,905). US 5,905,547 to Shimizu et al is relied on as an English translation of JP 09-043581. Shimizu teaches an information recording medium comprising a pair of electrodes, a ferroelectric liquid crystal material filled into a gap between the electrodes (figure 1b). Clark evidences the ferroelectric liquid crystal material has rod shape molecules. Therefore, the rod shape of the liquid crystal material is inherently present. The liquid crystal material has a phase transfer upon a change in the temperature of the liquid crystal material between a crystalline phase at a room temperature to an isotropic phase at an elevated temperature (column 14, lines 1-3). Shimizu does not specifically disclose a thickness of the gap between the electrodes being smaller than a domain size of the liquid crystal material in a cooled state from the isotropic phase in a final state. However, it appears that Shimizu uses the rod-shaped liquid crystal material to fill the gap between the electrodes and

the information recording medium meets all the limitations of structure and chemistry as set forth in the claims, it is the examiner's position that and the relation of the thickness of the gap between the electrodes and the domain size of the liquid crystal compound would be inherently present. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. This is in line with ***In re Spada***, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It is the examiner's position that Shimizu anticipates the claimed subject matter.

3. Claims 13, 16, and 20-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanna et al (US 6,174,455).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131. Hanna teaches a liquid crystal device comprising a pair of transparent electrodes of ITO, a liquid crystal material filled into a gap between the electrodes (example 5). Hanna teaches the liquid crystal made from 2-4'octylphenyl-6-dodecycloxynapthalene having phase transition series on temperature decreases of isotropic SmA SmC Crystal (example

5). Since Hanna uses the same liquid crystal material to fill the gap between the electrodes and the liquid crystal element of Hanna meets all the limitations of structure and chemistry as set forth in the claims, it is the examiner's position that the charge transport properties, the rod shape of the liquid crystal material and the relation of the thickness of the gap between the electrodes and the domain size of the liquid crystal compound would be inherently present. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. This is in line with ***In re Spada***, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties. It is the examiner's position that Hanna anticipates the claimed subject matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 13-17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-043581 in view of Demus et al, the article "Relations of Isomorphism Between Liquid Crystalline Phases. 21. Synthesis and Liquid Cystalline Properties of 4,4'-disubstituted Biphenyls", Journal de Physique, Colloque (1775), (1) p 349-354. US 5,905,547 to Shimizu et al is relied on as an English translation of P 09-043581. Shimizu teaches an information recording

medium comprising a pair of electrodes, a ferroelectric liquid crystal material filled into a gap between the electrodes (figure 1b). Shimizu discloses that the liquid crystal material has a phase transfer upon a change in the temperature of the liquid crystal material between a crystalline phase at a room temperature to an isotropic phase at an elevated temperature (column 14, lines 1-3). Shimizu discloses the laser beam being used as means for applying thermal energy as well as how the information is recorded (column 11, lines 15-20). Shimuzu is silent as to a specific liquid crystal recited in the claims. Demus, however, teaches a liquid crystal material comprising 4-hexyloxy-4-butanoylbiphenyl being used in the liquid crystal displays. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 4-hexyloxy-4-butanoylbiphenyl as the liquid crystal compound in the gap of the electrodes motivated by the desire to transport the electrons for utilization of light emission at the electrode interface.

It appears that Shimizu as modified by Demus uses the same liquid crystal compound to form a liquid crystal element and the liquid crystal element of Shimizu as modified by Demus meets all the limitations of structure and chemistry as set forth in the claims. The information recording medium of Shimizu as modified by Demus comprises a pair of glass substrates, a pair of transparent electrodes, a liquid crystalline charge transport material filled into a gap between the electrodes wherein the liquid crystal material is 4-hexyloxy-4-butanoylbiphenyl. The resulting information is recorded by laser beam. The

information recording is carried out by phase transfer caused in the background upon the application of laser beam. Therefore, it is the examiner's position that the charge-transport properties, the rod shape of the liquid crystal material, the relation of the thickness of the gap between the electrodes and the domain size of the liquid crystal compound would be inherently present. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. This is in line with ***In re Spada***, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties.

6. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-043581 in view of EP 763 532. US 5,905,547 to Shimizu et al is relied on as an English translation of JP 09-043581. Shimizu is silent as to a specific liquid crystal recited in the claims. EP'532, however, teaches a liquid crystal material comprising 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole being used in the liquid crystal displays. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole as the liquid crystal compound in the gap of the electrodes motivated by the desire to transport the electrons for utilization of light emission at the electrode interface.
7. Claims 13-17 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (US 5,861,108) in view of Demus et al, the article "Relations of Isomorphism Between Liquid Crystalline Phases. 21. Synthesis and

Liquid Cystalline Properties of 4,4'-disubstituted Biphenyls", Journal de Physique, Colloque (1775), (1) p 349-354. Ishida discloses a liquid crystal device comprising a pair of glass substrates **2**, a pair of transparent electrodes **3**, a liquid crystalline charge transport material **1** filled into a gap between the electrodes (figure 1, column 120, line 47). Ishida teaches the liquid crystal having phase transition temperature (column 180, lines 35-37). Ishida teaches the information is recorded by applying thermal energy (column 121, lines 40-43). Ishida is silent as to a specific liquid crystal recited in the claims. Demus, however, teaches a liquid crystal material comprising 4-hexyloxy-4-butanoylbiphenyl being used in the liquid crystal displays. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 4-hexyloxy-4-butanoylbiphenyl as the liquid crystal compound in the gap of the electrodes motivated by the desire to transport the electrons for utilization of light emission at the electrode interface.

Since Ishida as modified by Demus is using the same liquid crystal compound to form a liquid crystal element and the liquid crystal element of Ishida as modified by Demus meets all the limitations of structure and chemistry as set forth in the claims, it is the examiner's position that the charge-transport properties, the rod shape of the liquid crystal material and the relation of the thickness of the gap between the electrodes and the domain size of the liquid crystal compound would be inherently present. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is

incomplete. This is in line with ***In re Spada***, 15 USPQ 2d 1655 (1990) which holds that products of identical chemical composition can not have mutually exclusive properties.

Ishida as modified by Demus does not specifically disclose the laser beam being used as means for applying thermal energy as well as how the information is read. However, it is a product-by-process limitation not as yet shown to produce a patentably distinct article. It is the examiner's position that the liquid crystal element of Ishida as modified by Demus is identical to or only slightly different than the claimed information recording medium prepared by the method of the claim, because both articles are formed from the same materials, having structural similarity. The liquid crystal element of Ishida as modified by Demus comprises a pair of glass substrates, a pair of transparent electrodes, a liquid crystalline charge transport material filled into a gap between the electrodes wherein the liquid crystal material is 4-hexyloxy-4-butanoylbiphenyl. The resulting information is recorded by applying thermal energy. It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Ishida/Demus.

8. Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al (US 5,861,108) in view of EP 763 532. Ishida discloses a liquid crystal

element comprising a pair of glass substrates **2**, a pair of transparent electrodes **3**, a liquid crystalline charge transport material **1** filled into a gap between the electrodes (figure 1, column 120, line 47). Ishida teaches the liquid crystal having phase transition temperature (column 180, lines 35-37). Ishida teaches the information is recorded by applying thermal energy (column 121, lines 40-43). Ishida is silent as to a specific liquid crystal recited in the claims. EP'532, however, teaches a liquid crystal material comprising 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole being used in the liquid crystal displays. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole as the liquid crystal compound in the gap of the electrodes motivated by the desire to transport the electrons for utilization of light emission at the electrode interface.

9. The art rejections over Ishida in view of Demus have been maintained because Applicants do not point out the errors in the art rejections made in the 05/16/2003 Office Action of the parent case 09/477,725, filed 01/05/2000, now abandoned.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on M,T,Th, F, 7:00-4:30 and on alternating Wednesdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HV

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